REMARKS

This paper is responsive to the Office Action dated July 24, 2009 wherein claims 12-30 were rejected. Claims 12-30 remain pending in this application. In view of the following remarks, Applicants request further examination and reconsideration of the present patent application.

35 USC §103

In the Office Action, claims 12-30 were rejected under 35 USC 103(a) as being unpatentable over Shih et al. (US Patent Application Publication 2005/0152504, hereinafter "Shih") in view of Bruno DeMan (US Patent No. 7,023,951, hereinafter "DeMan"). Applicants respectfully traverse the rejections.

The cited references do not disclose features recited by independent claims 12, 21,28, 29 and 30.

Independent claims 12, 21, 28 and 30 and Claims Depending Therefrom.

Independent claims 12, 21, 28 and 30 recite *inter alia*, "generating a variance map from measured projection data acquired from a tomography system comprising: accessing the measured projection data from the tomography system, formulating a variance measure based upon the measured projection data, and generating the variance map from the variance measure using a reconstruction algorithm." Thus, as recited in the independent claims a measured projection data is acquired by a tomography system. The same measured projection data is then accessed from the tomography system and a variance measure based on the measured projection data is generated. Thereafter, a variance map is generated from the variance measure using a reconstruction algorithm. The present application teaches "an efficient approach for processing measured data and for generating variance data from measured projection image data." (*See* Application page 10, paragraph 0033).

The Examiner in the Office Action has pointed out that Shih teaches accessing the measured projection data from the tomography system (citing Figure 3 of Shih), formulating a variance measure based upon the measured projection data (citing paragraph [0010] of Shih) and generating a variance map from the variance measure using a reconstruction algorithm (citing paragraph [0043] of Shih). Applicants respectfully disagree.

Shih discloses a method of producing a variance reconstruction of variations between an object and a standard, which involves generating variance projections from the object projections by comparing the object projections with stored standard projections. (Emphasis added) (*See* Shih, paragraph 0010). Clearly, comparing the object projections with the standard projections as disclosed in Shih is not the same as using the same measured projection data that is acquired from a computed tomography system to formulate the variance measure as disclosed in the present application. Further, the variance image as disclosed in Shih reference depicts a variation between a part in current image and the "standard." On the contrary, the present application estimates a pixel variance in an image. Applicants respectfully submit that in the present application the variance is computed on a pixel-by-pixel basis (*See* Application, page 10, paragraph 0034, *see* also Fig. 4). Clearly, variation between a part in current image and the "standard" as disclosed in Shih reference is not the same as estimating a pixel variance in an image as disclosed in the present application. Hence, it is respectfully submitted that Shih fails to teach formulating variance measure based on the measured projection data as disclosed in the present application. Furthermore, the Examiner in the Office Action has conceded that Shih fails to teach or disclose generating a variance map from the variance measure using a reconstruction algorithm. The Examiner relied upon DeMan to obviate the deficiencies of Shih wherein the Examiner argued that DeMan discloses that a variance map is generated from a variance measure using reconstruction algorithm. (*See* Office Action, page 3). Applicants respectfully disagree.

DeMan discloses an iterative reconstruction method to reduce artifacts in CT images. The method as disclosed in DeMan relates to estimating the variance of sinogram data, and using this information to weight the measured sinogram data. Hence, the noisy sinogram data which are less reliable are weighted less in the reconstruction process and therefore contribute less to the reconstructed image. A portion of DeMan abstract is reproduced herein.

> "...receiving measured sinogram data from the computed tomography system. The sinogram data is representative of sinogram elements. The measured sinogram data is reconstructed to generate initial reconstructed image data. Then corrected sinogram data is generated using the measured sinogram data. The corrected sinogram data is iteratively reconstructed to generate an improved reconstructed image data based on a weight measure derived from the measured sinogram data".

Applicants respectfully submit that DeMan obtains improved reconstructed image data by iteratively reconstructing measured sinogram data based on a weight measure and does not

teach or disclose using the same measured projection data for generating a variance map as disclosed in the present application. Clearly, DeMan fails to disclose generating a variance map from the variance measure based on the measured projection data as disclosed in the present application. Additionally, DeMan fails to disclose, teach or suggest estimating the pixel variance in reconstructed images as disclosed in the present application. Hence, Applicants respectfully submit that the Shih either alone or in combination with DeMan fails to support a *prima facie* case of obviousness with reference to independent claims 12, 21, 28 and 30.

With regard to independent claim 29, the claim recites *inter àlia*, "a computer-readable medium storing computer instructions for instructing a computer system for generating a variance map from projection data acquired from a tomography system, the computer instructions comprising: accessing the projection data from the tomography system, generating a variance map from the projection data and displaying, analyzing or processing the variance map." Applicants respectfully submit that Shih fails to disclose a computer readable media for storing instructions for instructing a computer system for generating a variance map from the projection data and displaying, analyzing or processing the variance map. Applicants reiterate that DeMan fails to obviate the deficiencies of Shih with respect to a computer readable medium storing computer instructions for instructing a computer system for generating a variance map from the projection data, hence, Applicants respectfully submit that Shih either alone or in combination with DeMan fail to support a *prima facie* case of obviousness with regard to claim 29.

Further, claims 13-20 depend directly or indirectly on claim 12 and claims 22-27 depend directly or indirectly on claim 21 and hence are allowable by virtue of their dependency from the allowable base claim. Applicants also submit that the dependent claims are further allowable by virtue of the subject matter they separately recite. Thus, it is respectfully requested that the rejection of claims 12-30 under 35 USC §103(a) be withdrawn.

Summary

For the reasons set out above, Applicants respectfully submit that the application is in condition for allowance. Favorable reconsideration and allowance of the application are, therefore, respectfully requested.

If the Examiner believes that anything further is necessary to place the application in better condition for allowance, the Examiner is kindly asked to contact Applicants' undersigned representative at the telephone number below.

Respectfully submitted,

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